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## LIVESTOCK FEEDING AND THE FEED INDUSTRY IN SWITZERLAND*

### INTRODUCTION

As the natural conditions of farming, such as location, climate and soil, are extremely diversified in Switzerland, Swiss agriculture shows great variation.

Switzerland is only about 1/200 of the size of the United States. Of the total surface of 10.2 million acres about

1/4 accounts for unproductive land (Alpine Mountain Range)
1/4 consists of alpine grazing land
1/4 of forest land and only
1/4 can be considered as strictly agricultural land that can be cultivated.

The growth of towns and villages and the multiplication of communications and power dams are diminishing the country's agricultural and forest areas. The area suitable for intense agriculture is shrinking every day.

In Swiss agriculture the family farm predominates. For 1955 only 1.2 percent of all farms covered a surface of over 74 acres. Of Swiss farms 40 percent are smaller than 7 acres. Many farmers, naturally, depend on income of sidelines to assure the family's living.

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Switzerland is very industrialized. Only 13 percent of the whole population is rural. Shortage of labor, imports of low-priced agricultural commodities, and the ever increasing demand for high quality agricultural products have forced Swiss farmers to adopt modern farming methods. During the past few years, the Swiss farming population, although a rather conservative and reticent type of people, has to a large degree succeeded in adapting itself to scientific farm management.

## POTENTIALS OF FEED UTILIZATION

Swiss agricultural emphasis is on livestock, which accounts for almost 70 percent of the gross agricultural income.

Excluding horses, sheep, and goats, in 1958 Swiss livestock was comprised of 1.5 million head of cattle (including 900,000 milk cows); 1.2 million head of pigs (including 100,000 sows) and 6.5 million poultry (including 4 million layers).

The feed of Swiss *ruminants* is based primarily on home-produced feedstuffs. From April until October they are fed almost exclusively on green fodder. In winter, usual feeding methods with hay and root-crops are sufficient for a daily production of 15 to 26 pounds of milk. Very often this basic ration is supplemented by dehydrated grass and silage which increase daily production to 32 to 40 pounds of milk.

In all regions where in winter Swiss hard cheese (Emmental and Gruyere) is manufactured, the feeding of silage is strictly prohibited, since silage feeding often results in bloated cheese loaves. The average daily allowance of concentrates during the winter amounts to about 2 pounds per cow. Growing dairy calves are given about 100 to 200 pounds of calf meal in addition to 1,200 to 1,800 pounds of whole milk and free forage supply.

One-third of all *pigs* in Switzerland are raised on small farms, which keep from 1 to 10 head. The very few pork producers with more than 100 animals are usually well provided with skim milk or whey. In order to supplement the farm-grown feedstuffs (such as potatoes, roots, fresh or ensiled grass, and a limited amount of grain) large quantities of grains, as well as vegetable and animal protein feeds, have to be imported. Hog-feeding techniques are governed mostly by consumer demand for high-quality lean meat.

At the beginning of 1958 only 1,330 poultry farmers, accounting for one-half a percent of all *poultry* owners, kept more than 150 hens. Only 6 poultry farms keep flocks of over 6,000 hens. Poultry production is predominantly a sideline of family farms, and the Swiss government encourages this system. Based upon the progress made abroad, poultry feeding has reached a high standard.

The annual turnover of commercially sold formula feeds amounts to around 200 thousand tons, manufactured mainly by private feed manufacturers and agricultural cooperative unions. Besides various small and moderately equipped feed mills, there are some modern plants with an hourly capacity of about 10 tons.

## MAJOR MARKETING PROBLEMS

During the past years the average results in cattle, pig, and poultry production have been considerably improved. Further progress in this respect undoubtedly is still possible. As, however, Switzerland's requirements for meat and milk products are already covered to the extent of about 90 percent of the present production, a further increase would only add to the surplus and, therefore, increase difficulties in marketing.

Swiss climatic and topographic conditions are quite favorable to grassland and dairy farming, and production of veal and pork is sufficient for domestic needs. Increased seasonal demand for beef can be met by imports. However, the balance of Swiss total meat production is jeopardized by increasing imports of cheap poultry.

An increase in animal production such as milk and meat, during peacetime, is not desirable. However, emphasis should be laid upon the lowering of the cost of production, which would result in cheaper prices. If this can be achieved, the subsidies so far paid by the government to keep consumer prices down, may be reduced.

## IMPORTS OF FEEDSTUFFS AND THEIR REGULATION

Present imports consist principally of concentrates. They cover 4 percent of the nutritional requirements of cattle, 37 percent of the requirements of pigs, and 56 percent of the requirements of poultry. The average quantities per year of imported concentrated feeds in metric tons (in the years 1951 to 1958) follow; byproducts produced in Switzerland from imported grain and oilseeds are in parentheses :

| | | |
|---|---|---|
| Grains ... | ... | 380,000 |
| Cereal milling byproducts | ... | 27,000 (plus 90,000) |
| Oilseed byproducts | ... | 27,000 (plus 50,000) |
| Animal and marine byproducts | ... | 27,000 |

Feed grains are imported by private trade, but within the framework of regulations which regutate the volume of imports and equalize the cost to consumers of imported and home-grown feeds.

To import feed grains, an importer must obtain a permit or quota from the Swiss Grain and Feed Cooperative Society (Schweizerische Genossenschaft fur Getreide und Futtermittel, Schwanengasse 2, Berne). This organization is quasi-governmental. Its membership includes the principal Swiss feed importers and wholesalers.

The total of import quotas is established quarterly in advance, on the basis of a public hearing held primarily to obtain information as to the prospective requirements. Major policies, however, are established by directives issued to the organization by the Federal Council.

The tariff for import duties on feed grains is nominal, but importers must pay a price supplement for the import licenses. These price supplements are assessed on a per-ton unit basis and vary somewhat depending on the type of feed grains to be imported.

The price supplement rates in effect in 1959 follow (in Swiss francs per metric ton) :

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|---|---|
| Corn ... ... ... | 55 |
| Barley ... ... ... | 90 |
| Oats ... ... ... | 60 |
| Wheat for feeding ... ... | 60 |

The revenues thus obtained are used primarily to pay premiums to farmers on coarse grain acreage. In 1958 payments to producers amounted to SF300 per 2.5 acres on oats, barley, corn for grain and millet. In mountainous areas, additional payments from SF60. to SF120 are made.

The mechanism of price supplements on imported feed stuffs is so operated and adjusted from time to time as to equalize approximately the cost to the user of domestically grown and imported feeds. The consequence of this policy is, of course, to increase the price of livestock products to consumers. This appears, however, to be a cost which the Swiss economy is willing to pay as a means of assuring more adequate food supplies in the event of an international crisis.

It is a fixed government policy to encourage as much as possible domestic production of feedstuffs and to avoid excessive expansion of livestock production dependent upon imported feeds.

As a result, changes in world prices of feed have little influence on the volume of Swiss feed imports. Relative prices of exporting countries determine the source of supply of imports, but over any period of time, a general reduction in the level of prices would not result in any significant increase in imports.

## LEGISLATIVE ASPECTS AND RESTRICTIVE REGULATIONS IN THE FEED INDUSTRY

All feedstuffs marketed in Switzerland are subject to inspection by the Federal Agricultural Testing Stations. The regulations concerning designation, quality, composition and nutritive value are set forth in the Handbook of the Animal Feed Section (Futtermittelbuch, to be ordered from Eidg. Drucksachen— und Materialzentrale, Berne 2, at present in revision). Feedstuffs mentioned in the Handbook and conforming to its definitions and requirements may be marketed by any person without prior license.

Single feeds and 33 admitted formula feeds for ruminants, pigs and poultry have to be marketed under an appropriate name, declared on the bag or the tag. In addition to the name of the product, the following information must be provided :

(1) In the case of single feeds : Any discrepancies between the feed and the requirements, i.e., moisture, impurities, protein, crude fiber, etc.

(2) In the case of mixed feeds :

—the minimum content of crude protein and the maximum content of crude fiber, both within the limits set forth in the Handbook ;

—the fat content of high-energy feeds ;

—the vitamin content, if reference is made on the label or in advertising—only in such cases minimum requirements must be met ;

—the name and the content of active ingredients with specified or unknown effects and of drugs. The use of such additives is subject to a special license, issued by the Federal Agricultural Testing Stations.

On requests, the following additives are allowed within certain limits at present :

Antibiotics : Aureomycin, Bacitracin, Hygromycin, Penicillin and Terramycin.

Coccidiostats : Formo-Cibazol (CIBA), Nicarbazin, Nitrophenide, Nitrofurazone and Sulfaquinoxaline.
Both antibiotics and coccidiostats are widely used by feed manufacturers.

Antioxydants : Propyl—, Octyl—and Dodecylgallate, BHA and BHT.

Tranquilizers : Reserpine (CIBA).

The use of arsenicals and hormones is strictly prohibited, but the addition of enzymes and pure amino acids is not. However, the Handbook states the use of a minimum amount of animal protein feeds in all formula feeds for pigs and poultry (between 1/4 and 2/5 of the total protein), except for animals which get a considerable amount of skimmed milk or butter milk. Besides, special attention may be drawn to the fact that urea is not permitted for feeding purposes.

## TECHNOLOGICAL ADVANCES IN LIVESTOCK FEEDING AND IN FEED MANUFACTURING

Efforts to increase quality and quantity of home-grown feeds have resulted in a considerable rise in animal production. Among other factors, the following have been of major importance for the improvement of quality of roughages :

—Expansion of silage making. Early-cut, wilted, protein-rich grass and legumes are the preferred materials for preservation in silos, whereas corn and other crops low in protein are rarely used.

—Increased number of dehydrating plants, spread over the whole country. In 1958 about 70,000 metric of artificially dried grass have been produced in more than 100 plants, 28 of them of American origin (Heil-Arnold).

—Introduction of barn-drying of pre-wilted roughage.

Although the volume of imports of concentrates did not change significantly in the postwar years, a marked increase in the productivity of poultry and pigs was also achieved. This improvement was due partly to better breeds and management, and partly to the use of better balanced formula feeds instead of single feeds. Pelleted feeds are used only for ruminants and poultry in limited amounts. Owing to decreasing cost of pure amino acids and animal fats, the Swiss feed manufacturing industry has grown more and more interested in the addition of these ingredients to formula feeds.